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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,198	04/23/2002	Wolfgang Ehrfeld	FMW-RR-PCT-US	4901

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HUDAK, SHUNK & FARINE, CO., L.P.A.
2020 FRONT STREET
SUITE 307
CUYAHOGA FALLS, OH 44221

EXAMINER

BHAT, NINA NMN

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,198

Applicant(s)

EHRFELD ET AL.

Examiner

N. Bhat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-17 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12-14-2001.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Bergh et al. USP 6,749,814

Bergh et al. teach a chemically processing microsystem which comprises a plurality of microreactors. the microreactors are preferably diffusion mixed microreactors formed in a plurality of laminae that include a modular interchangeable candidate material array. [Note the abstract]. Specifically the chemical processing microsystem includes a diffusion mixed microreactor. The diffusion mixed microreactor is designed such that when operating as a continuous flow reactor where one or more reactants for chemical reaction are continuously supplied to the micro reactor, the reaction occurs therein under process conditions effective for the chemical reaction. The mixing of reactants is achieved on a microscopic level with an active mixing microcomponent. The continuous diffusion mixed microreactor is a model on the microscopic scale or a continuous stirred tank reactor. The diffusion mixed microreactors are advantageous over channel type micro reactors including microreactor having tortuous channels to effect passive mixing because complete

mixing occurs within a much smaller volume. [Note Column 12, lines 35-65] The microprocessor or micromixer are formed in a plurality of laminae that include interchangeable candidate material array. the material array comprises a plurality of different candidate material such as catalysts preferably arranged as separate individually addressable portions of a substrate. Bergh et al. further teach that reactants can be supplied to the microreactor from an external distribution system comprising one or more reactant sources. The external fluid distribution system can comprise fluid communication between external fluid distributions system and the plurality of microreactor through one or more common inlet ports to the reactors, and can include flow control devices, control valves, temperature control and microfluidic heat exchanger means to provide fluid communication between the microreactors and external distributions systems and microfluidic distribution system. Note column 30, lines 29-65]. The distribution manifold is a microfluidic device, which provides its function of fluid distribution and additionally can function to reduce pressure in the microreactor system. The distribution manifold is depicted in Figures 7B to 7I. [Note Column 34 lines 18-42] It is maintained that the microsystem as taught and described by Bergh et al. fully anticipates applicant's micromixing claims even though Bergh et al. does not use applicant's terminology of "channels and digital channels" and "main channels that intermesh in a comb-like matter", this is implicitly implied by the teachings and function of the microprocessing system and explicitly shown by the Figures of Bergh et al. and the microsystem of Bergh et al. functions equivalently to the micromixer as claimed.

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3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Roscher et al. teach a microfluidic apparatus for analyzing liquid samples automatically and continually. Thumm et al. teach a multiple stream high-pressure mixer/reactor. Gustafson et al. teach a system and method for preparing microfluidic devices having a fluidic inlet at least one fluidic outlet a plurality of microfluidic channels disposed between the fluidic inlet and outlet and separation media disposed within at least one microfluidic channel, a vacuum source in communication with the fluidic inlet and at least one fluidic outlet and an evacuating means for evacuating gas from the microfluidic device as well as means to introduce a liquid into the microfluid device under positive pressure. Liu et al. teach enhanced mixing in a microfluid device. WO 01/43857 teach a micro mixer which includes a three-dimensional microstructure in a fixed material in which chemical reaction takes place.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



N. Bhat
Primary Examiner
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